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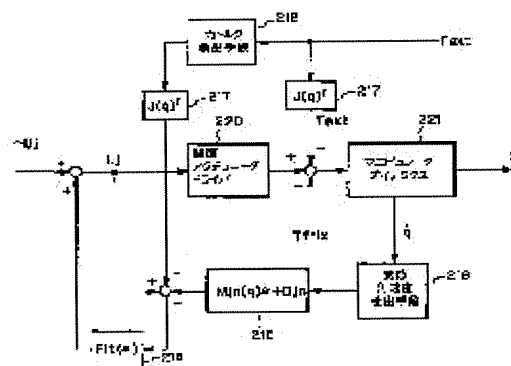
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(54) COMPLIANCE CONTROL METHOD OF MANIPULATOR

(57)Abstract:

PROBLEM TO BE SOLVED: To realize stable and precise contact work by setting off disturbance by using an observer to estimate disturbance caused by non-linear friction, etc., in the inside of a force feedback loop of torque base compliance control.

SOLUTION: Torque generated on a joint by a force vector F_{ext} which a terminal of a manipulator gives to an environment is detected by a force torque detection means 218. Inertial force and viscous frictional force of the manipulator is determined by a computing part 215 (nominal values $M_{jn}(q)$, D_{jn} of an inertial matrix and a viscosity matrix of the manipulator). In addition to these values, non-linear friction of the manipulator is estimated in accordance with a joint speed vector of the manipulator and a low pass filter 216 (a low pass filter matrix $Flt(s)$ to remove a high frequency component). Thereafter, force torque compliance control is constituted by regarding a difference of the non-linear friction estimated as control input u_j as new control input.



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